WILDLIFE MANAGEMENT AND RESEARCH NOTES

INDIANA DIVISION OF FISH&WILDLIFE

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	Title	
864	Breeding Indices of Ruffed Grouse - Spring, 2004.	7/13/04

Abstract: *Ruffed grouse breeding populations remained at their lowest levels in over 2 decades. The 2004 drumming index for 8 survey control routes was 0.06 drumming males heard per stop as it was in 2003 or 5% of levels recorded during the peak years of 1979-81. The 5-year mean drumming index (2000-2004) is 0.09 drummers per stop or approximately one drummer heard every 10 stops. Only 1 grouse was heard on the Maumee Grouse Study Area for an estimate density of 0.2 grouse/100 acres compared to 5.8 grouse/100 acres 25 years ago. Prospects for population recovery are poor given the continual advancement of forest succession and the lack of active forest management on public forestlands in southcentral Indiana, the core of the ruffed grouse range in the state.*

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Ruffed grouse breeding population indices were estimated during the spring of 2004 along 10 roadside drumming trend routes. The annual drumming activity center count was conducted at the Maumee Grouse Study Area located on Hoosier National Forest in Jackson/Brown counties. Roadside counts ranged from 0 to 0.13 grouse heard per stop (15 stops/route) **(Table 1)**. The upper range of these values has been relatively low since 1982 when a downward trend in the grouse population became evident after a high in 1979. Three routes showed an increase, two routes showed a decrease, and five had no trend change from the previous year. The combined mean for the 8 control areas was 0.06 grouse heard per stop as it was in 2003 **(Table 2)**. The 5-year mean drumming index (2000-2004) is 0.09 drummers per stop or approximately one drummer heard every 10 stops. Drumming indices for the control routes indicate grouse breeding populations have declined fairly steadily since the cyclic peak of 1979 and are only at 5% of levels recorded during the peak years of 1979-81.

One drumming activity center was located on the Maumee Grouse Study Area for estimated spring breeding population density of 0.2 grouse/100 acres **(Table 3).** In 1980 (25 years ago), 24 activity centers were identified and the estimated density was 5.8 grouse/100acres. Habitat on the Grouse Study Area is fairly reflective of habitat conditions on the Pleasant Run Unit of Hoosier National Forest. While there are some periodic fluctuations in the grouse breeding population density on the study area, there is a general downward trend as more mature forest conditions prevail. The activity center was located in an abandoned, overgrown field opening. Since active vegetation management is not allowed under the current management prescription for this area of Hoosier National Forest, the small ephemeral pieces of grouse breeding habitat are expected to disappear within the next 5 years. The Maumee Grouse Study Area lies in the heart of the 1961 remnant distribution of ruffed grouse (Backs 1984) used in the 1960-70's to reestablish ruffed grouse elsewhere in Indiana.

Roadside drumming indices and Maumee density estimates show fairly parallel downward trends over 2 decades **(Figure 1).** Advanced forest succession is the primary reason for the continual decline of ruffed

grouse. Ruffed grouse habitat is primarily dense, early successional stages of hardwood that are disappearing in the major forest tracts in Indiana and the eastern United States. Data extracted from the 1998 inventory of Indiana's forests (Schmidt et al 2000) indicates the seedling/sapling/pole timber components of the Knobs Sampling Unit has steadily declined (-52%) since 1967, being replaced by mid to late successional sawtimber. The Knobs Sampling Unit covers a major portion of southcentral Indiana and the primary range of existing ruffed grouse populations in Indiana. Similar declines in the seedling/sapling/pole components have also occurred across the Hoosier National Forest (Leatherberry 2003). Hoosier National Forest and nearby public forest lands formed the core of what was the limited remnant range of ruffed grouse in 1961 (Backs 1984).

The proportion of seedling/sapling/poletimber components are indicative of transitional habitats between grasslands and mature forests used by a wide variety of wildlife species that historically resulted from natural disturbances (e.g. tornadoes, fire storms, insect outbreaks). These types of transitional areas are not only habitat for gamebirds as ruffed grouse and woodcock but a host of songbirds and mammals in the eastern United States that are also undergoing significant and parallel declines (See a series of papers in "Conservation of woody, early successional habitats and wildlife in the eastern United States" pages 407-494, Wildlife Society Bulletin Vol. 29, No. 2, Summer 2001). Until public land managers again have the flexibility and the public support to use various vegetation or timber management tools to mimic natural disturbances on what remains of the contiguous forest ecosystem, we can expect further losses in early successional habitats and dependent wildlife species.

Literature Cited

Backs, S.E. 1984. The historic and present distribution of ruffed grouse in Indiana. Proceedings of the Indiana Academy of Science. Vol 93:161-166.

Leatherberry, E. C. 2003. The forest resources of Hoosier National Forest, 1998. Resource Bull. NC-210. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 54 p.

Schmidt, T. L., M.H. Hansen, and J.A. Solomakos. 2000. Indiana's forests in 1998. Resource Bulletin NC-196. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 139 p.

Table 1. Numbers of ruffed grouse heard on roadside drumming counts in Indiana between 30 March -15 April 2004.

County / Area	Total Routes	Total Stops	Cumm. Grouse Total Grouse Heard	Heard Highest Count	Cumm Total Drums	Highest Drum Count	Total No. Seen	1/ Grouse Heard Per Stop 2003	1/ Grouse Heard Per Stop 2004	1/ Drummings Per Stop 2003	1/ Drummings Per Stop 2004	Grouse Heard Per Stop Trend Directions 94	95	96	97	98	99	00	01	02	03	04
* Jackson, Brown, Monroe (Hickory Ridge, USFS)	2	30	0	0	0	0	0	0.00	0.00	0.00	0.00	+	-	0	+	+	-	+	-	0	-	0
*Owen-Putnam	2	30	0	0	0	0	0	0.00	0.00	0.00	0.00	-	-	+	-	-	0	+	-	-	0	0
*Perry Co. (Oriole-St. Croix-USFS)	2	30	1	1	2	2	0	0.00	0.07	0.00	0.13	-	0	0	0	-	+	0	+	0	-	+
*Washington State Forest	2	30	3	2	7	4	1	0.13	0.13	0.20	0.27	-	+	-	+	0	-	0	0	+	-	0
**Lawrence & Orange (Lost River E, USFS)	3	45	2	2	4	4	0	0.07	0.13	0.07	0.27	+	+	-	+	0	-	-	-	-	+	+
Martin & Orange (Lost River W, USFS)	2	30	2	0	0	0	0	0.07	0.00	0.13	0.00	-	-	+	-	+	0	0	0	0	-	-
**Morgan-Monroe State Forest	2	30	3	2	7	6	0	0.13	0.13	0.13	0.40	-	+	-	+	-	0	0	0	-	+	0
**Greene	2	30	0	0	0	0	0	0.07	0.00	0.20	0.00	+	-	-	0	+	-	+	+	+	-	+
**Orange (Lick Creek, USFS)	2	30	0	0	0	0	0	0.07	0.00	0.07	0.00	0	0	-	-	0	-	+	0	+	-	-
Jefferson	2	30	1	1	1	1	1	0.07	0.07	0.07	0.07	-	0	0	+	+	0	0	-	0	+	0
Crane Naval Base ***																						
NW-Cent. Yellow Rt	2	30	0	0	0	0	0	N/A	0.00	N/A	0.00											
NE Pink Rt.	2	30	0	0	0	0	0	N/A	0.00	N/A	0.00											
SE-Cent. OrangeRt.	2	30	1	1	3	3	0	N/A	0.07	N/A	0.20											
South Blue Rt.	2	30	4	2	8	5	0	N/A	0.13	N/A	0.33											

1/ Indices calculated using route with highest count. Trend direction from previous year indicated; +, -, 0 = no change, NT = no trend.

* Areas surveyed annually and used as controls to index overall population trends.

** New (1987) areas added as controls to broaden grouse range coverage.

*** Special interest routes conducted on Crane Naval Base during 2004 primarily to assess relative wild turkey densities. Drumming grouse were also counted.

Table 2. Drumming count indices along roadside control routes, 1979-2004.

	Grouse Heard Per Stop by Roadside Route *								
Year	HICKORY	OWPUT	PERRY	WASH	LR-EAST	MORGAN	GREENE	LICKCR	MEAN
1979	1.00	0.27	-	0.53	-	-	-	-	1.80
1980	1.27	0.53	0.60	0.73	-	-	-	-	0.78
1981	1.33	0.89	0.60	0.80	-	-	-	-	0.91
1982	0.73	0.40	0.20	1.07	-	-	-	-	0.60
1983	0.53	0.27	0.33	0.40	-	-	-	-	0.38
1984	0.93	0.20	0.33	0.00	-	-	-	-	0.37
1985	1.00	0.47	0.20	0.07	-	-	-	-	0.44
1986	1.00	0.33	0.13	0.07	-	-	-	-	0.38
1987	0.40	0.47	0.20	0.13	0.27	0.27	0.13	0.33	0.28
1988	0.33	0.13	0.07	0.07	0.33	0.33	0.27	0.47	0.25
1989	0.67	0.20	0.21	0.07	0.27	0.47	0.20	0.73	0.35
1990	0.47	0.20	0.13	0.13	0.37	0.47	0.27	0.47	0.31
1991	0.13	0.13	0.07	0.00	0.40	0.13	0.13	0.53	0.19
1992	0.13	0.13	0.13	0.00	0.27	0.07	0.27	0.40	0.18
1993	0.07	0.40	0.13	0.07	0.33	0.40	0.47	0.40	0.28
1994	0.20	0.07	0.07	0.00	0.40	0.27	0.53	0.40	0.24
1995	0.13	0.00	0.07	0.07	0.47	0.47	0.13	0.40	0.22
1996	0.13	0.27	0.07	0.00	0.33	0.27	0.07	0.20	0.17
1997	0.20	0.20	0.07	0.07	0.53	0.40	0.07	0.07	0.20
1998	0.27	0.07	0.00	0.07	0.53	0.07	0.27	0.07	0.17
1999	0.07	0.07	0.07	0.00	0.40	0.07	0.07	0.00	0.09
2000	0.13	0.20	0.00	0.00	0.27	0.07	0.20	0.13	0.13
2001	0.07	0.07	0.07	0.00	0.13	0.07	0.13	0.13	0.08
2002	0.07	0.00	0.07	0.27	0.00	0.00	0.20	0.20	0.10
2003	0.00	0.00	0.00	0.13	0.07	0.13	0.07	0.07	0.06
2004	0.00	0.00	0.07	0.13	0.13	0.13	0.00	0.00	0.06

* = Indices calculated using route with highest count.

HICKORY = Hickory Ridge (USFS), Lawrence and Jackson Counties
OWPUT = General area of Owen-Putnam St. Forest
PERRY = northern portion of Perry Co.(USFS)
WASH = general area of Jackson-Washington St. Forest in Washington County
LR-EAST = Lost River Unit - East, USFS, Lawrence and Orange Counties.
MORGMON = general area of Morgan-Monore St. Forest in Morgan county.
GREENE = eastern Greene County
LICKCR = Lick Creek Area, USFS, in Orange County.
MEAN = Arithmetic average value for all routes

Table 3. Spring breeding densities of ruffed grouse, Maumee Grouse Study Area.

YEAR	DRUMMING ACTIVITY CENTERS *	POPULATION DENSITY Per 40 ha (100 a) **
1969	12	2.9
1970	20	4.8
1971	16	3.9
1972	19	4.6
1973	9	2.2
1974	survey not conducted	
1975	14	3.4
1976	14	3.4
1977	18	4.5
1978	20	5.0
1979	17	4.3
1980	24	5.8
1981	20	4.8
1982	19	4.6
1983	11	2.7
1984	11	2.7
1985	11	2.7
1986	14	3.4
1987	10	2.4
1988	8	1.9
1989	8	1.9
1990	16	3.9
1991	9	2.2
1992	9	2.2
1993	7	1.6
1994	4	0.9
1995	4	0.9
1996	12	2.4
1997	8	1.7
1998	7	1.6
1999	10	2.3
2000	6	1.4
2001	5	1.1
2002	6	1.4
2003	2	0.5
2004	1	0.2

* Area covered varied from 800 to 1,000 acres; mean area covered = 875 acres.

** Assumes a 50:50 sex ratio and represents a minumum because of non-drumming males (Gulion 1981)

Figure 1. Indiana Grouse Population Trends